



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/385,181	08/30/1999	EDWARD RIEGELSBERGER	ARELP103	8804

21912 7590 04/20/2005

VAN PELT, YI & JAMES LLP  
10050 N. FOOTHILL BLVD #200  
CUPERTINO, CA 95014

EXAMINER
----------

FLANDERS, ANDREW C

ART UNIT	PAPER NUMBER
----------	--------------

2644

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/385,181

Applicant(s)

RIEGELSBERGER, EDWARD

Examiner

Andrew C Flanders

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4, 5, 6, 7, 8, 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe (US Patent 5,781,461) in view of Anonymous (Research Disclosure 371051).

5. Regarding claim 1 Jaffe discloses a method of changing delay time intervals (col. 7 lines 44 – 46) between two readers for reading data at corresponding positions of the delay line (col. 4 lines 16 – 20) (i.e. a first audio signal generated from a buffer, a second audio signal generated from a buffer, and a method of adjusting a time delay between first audio signal/first data stream and a second audio signal/second data stream), a sampled data delay line (col. 4 line 16) (i.e. buffer), and an interpolator (col. 6 lines 8 – 10) (i.e. a sample rate converter). Therefore Jaffe anticipates all elements of Claim 1 except for changing one of the consumption rates to provide an adjusted time delay. Anonymous discloses a method to achieve an adjustable time delay by changing the output rate of a FIFO buffer (paragraph 2 of the Basic Abstract). It would be obvious to one of ordinary skill in the art to modify Jaffe's delay method with anonymous' teachings to alter the consumption rate in order to change the delay. One would be motivated to do this to allow Jaffe's system to provide a variety of effects including

delay, reverberation, vibrato, chorus, flange, or other special effects (Jaffe - col. 6 lines 12 – 14).

6. All elements of Claim 12 are comprehended by Claim 1, and it is rejected on the same grounds.

7. Regarding Claim 4, in addition to the elements stated above in Claim 1, Anonymous discloses using interpolation between samples (as customary in sample-rate conversion techniques) (paragraph 2 of the Basic Abstract) (i.e. interpolating data samples of the data streams to convert the consumption rates to the output sample rate). One of ordinary skill in the art at the time of the invention would be motivated to use interpolation to change the consumption rates to the output rates in order to obtain a smooth transition between the signals of different sample rates.

8. Regarding Claims 5, 6, and 7, in addition to the elements stated above in Claim 1, Anonymous discloses a method to achieve an adjustable time delay by changing the output rate of a FIFO buffer (paragraph 2 of the Basic Abstract) (i.e. changing the consumption rate to increase or decrease the rate of time delay). It would have been obvious to one skilled in the art at the time of the invention to change consumption rates as taught by Anonymous to the delay system taught by Jaffe for the purpose of adjusting a time delay.

9. Regarding Claim 8, in addition to the elements stated above in claim 1, Jaffe discloses a sampled data delay line with two readers for reading data at corresponding positions of the delay line (col. 4 lines 16 – 18) (i.e. first and second consumption rates are the same prior to changing).

10. Regarding Claim 14 in addition to the elements stated above in claim 12, Jaffe discloses a sampled data delay line with two readers for reading data at corresponding positions of the delay line (col. 4 lines 16 – 18) (i.e. first and second audio samples output from a buffer with an initial time delay

11. Regarding Claim 15, in addition to the elements stated above in claim 12, Jaffe discloses readers that can be virtually any device for generating a steady or time varying note from data read from the delay line structure (col. 6 lines 6 – 8) (i.e. comprising a queue to receive samples from the buffer and transmit them to the sample rate converter).

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe (US Patent 5,781,461) in view of Anonymous (Research Disclosure 371051) as applied to claim 1 above and further in view of Yoshida (US Patent 6,477,255).

13. Regarding Claim 2, as stated above in claim 1 the combination of Jaffe and Anonymous makes obvious all elements except wherein a first data stream represents a direct path signal and a second data stream represents a reflected signal, and calculating the adjusted time delay based on the propagation delay between the two signals. Yoshida discloses a direct sound from stereophonic loudspeakers and a reflected sound (col. 5 lines 33 and 34) (i.e. a direct path signal and a reflected signal). Yoshida also discloses a system wherein the time difference of the delay means is obtained based on the time difference between a first propagation delay time and a second propagation delay time (col. 10 lines 20 – 24) (i.e. calculating the adjusted time delay based on the difference between propagation delay of the direct path signal and

reflected signal). One of ordinary skill in the art at the time of the invention would be motivated to calculate the time delay between two signals, a reflected and a direct path signal to create an adjustable delay to further control various sound effects taught by Jaffe (Jaffe – col. 6 lines 12 – 14).

14. Claims 3, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe (US Patent 5,781,461) in view of Anonymous (Research Disclosure 371051) and in further view of Rossum (US Patent 6,138,207).

15. Regarding Claim 3, as stated above in claim 1 the combination of Jaffe and Anonymous makes obvious all elements except wherein the buffer is located on a host computer and said data streams are received on the sound card. Rossum discloses a computer system which includes a main memory (Fig. 1, reference 18) (i.e. a buffer located on a host computer), a sound card (Fig 1. reference 12) capable of receiving a PCI data stream (Fig. 1, reference 14) (i.e. receiving an audio stream or data stream on a sound card). One of ordinary skill in the art at the time of the invention would be motivated to have an audio board be able to share the memory (i.e. buffer) of the computer system rather than having its own memory in order to reduce the need for costly onboard audio memory (col. 1 lines 58 – 59).

16. Regarding Claim 13 as stated above in claim 12 the combination of Jaffe and Anonymous makes obvious all elements except wherein the buffer is located on a host computer and the sample rate converters are located on a sound card. Rossum discloses a computer system which includes a main memory (Fig. 1, reference 18) (i.e.

a buffer located on a host computer) and interpolating between audio samples (col. 1 line 24) (i.e. the sample rate converter on a sound card).

17. Claims 9, 10, 11, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe (US Patent 5,781,461) in view of Anonymous (Research Disclosure 371051) and further in view of Guo (US Patent 5,457,719).

18. Referring to claims 9, and 16, as stated above in claims 1 and 12 the combination of Jaffe and Anonymous makes obvious all elements except wherein changing the consumption rate comprises measuring the adjusted time delay, comparing it to a desired delay, and adjusting the rate of consumption until the measured output delay matches the desired delay. Guo discloses digital scheme that detects delay variations (col. 2 line 2) and a phase comparator for phase comparison between the phase shifted signal and the original (col. 2 lines 19 – 23) (i.e. measuring an adjusted time delay and comparing it to a desired delay). It would have been obvious to one of ordinary skill in the art at the time of the invention do this in order to provide reliable delay regulation (Guo col. 1. lines 63 –67).

19. Referring to claims 10 and 17 as stated above in claims 1 and 12 the combination of Jaffe and Anonymous makes obvious all elements except wherein adjusting the consumption rate comprises providing continuous feedback and correcting the consumption rate as required. Guo discloses a real time delay detection (col 2 line 15) (i.e. continuous feedback).

20. Referring to claim 11, as stated above in claim 9 the combination of Jaffe and Anonymous makes obvious all elements except increasing or decreasing the rate for a

Art Unit: 2644

set period of time to correct error in the measured delay. Guo discloses a method of comparing phase (col. 2 lines 19 – 23) (i.e. adjusting the consumption rate to achieve a measured delay).

### ***Response to Arguments***

Applicant's arguments filed 31 January 2005 have been fully considered but they are not persuasive.

Applicant states:

“This rejection is respectfully traversed. With respect to Claim 1, the Examiner has suggested that the interpolator of Jaffe is a sample rate converter. This suggestion is respectfully traversed. Jaffe discloses that “each reader may include an interpolation filter, such as an all pass filter, so that the delay line length associated with each note can be a non-integer value.” An interpolation filter does not receive a “data stream at a first sample rate converter at a first consumption rate and generate a first output data stream at an output sample rate” as recited in Claim 1. As described in the specification, the sample rate converter “includes an interpolation filter to allow for the instantaneous value of the signal to be determined at any arbitrary point between samples, as is necessary when a different sampling rate is introduced due to the non-coincidence of sample times within the converter,” an interpolation filter is not a sample rate converter.”

Examiner has considered this argument but does not consider it persuasive.

Applicant states as Jaffe says in col. 4 lines 34 – 37, each reader may include an interpolation filter, such as an all pass filter, so that the delay line length associated with each note can be a non-integer value. Jaffe uses the term “such as” to indicate that an all pass filter is not the only interpolation filter that may be used. Jaffe further discloses that at least two types of interpolation are well known for producing a delay line of fractional length: linear interpolation filters and all pass filters (col. 3 lines 6 – 8). As



Art Unit: 2644

disclosed the term "such as" leaves open the possibility of using one of the two disclosed interpolation filters.

Applicant further suggests that "An interpolation filter does not receive a "data stream at a first sample rate converter at a first consumption rate and generate a first output data stream at an output sample rate" as recited in Claim 1." However, Jaffe further discloses the following about the interpolation filter "if  $a_0$  is set equal to 0.5, the delay line has an effective length of  $L + 0.5$ , and  $out(n)$  is equal to the average of the two data samples most recently read by the filter" (col. 3 lines 26 – 30) and "For instance, when the control coefficient  $a_0$  is set to 0.5 in the linear interpolation filter, the filter acts as a low-pass filter with a zero of transmission at half the sampling rate" (col. 3 lines 38 – 44). While Jaffe discloses that this may not be the best implementation of an interpolation filter for the claimed invention, it is still one possible implementation and reads upon the sample rate converter claimed by Applicant.

Applicant further suggests "the sample rate converter "includes an interpolation filter to allow for the instantaneous value of the signal to be determined at any arbitrary point between samples, as is necessary when a different sampling rate is introduced due to the non-coincidence of sample times within the converter,". By doing so, Applicant is suggesting the interpolation filter disclosed by Jaffe is the same as the Interpolation filter disclosed by Applicant. This is not the case as shown above. As such the interpolation filter disclosed by Jaffe outputs an average of two data samples and can act as a low pass filter with a zero of transmission at half the sampling rate. Therefore the rejection stands.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C Flanders whose telephone number is (571) 272-7516. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

acf

**SINH TRAN**  
**SUPERVISORY PATENT EXAMINER**

**SINH TRAN**  
**SUPERVISORY PATENT EXAMINER**